

WHAT IS CLAIMED IS:

1. A controller of a vehicle comprising an engine for outputting driving rotation by a crank shaft, a motor connected to the crank shaft of the engine, and a battery for supplying electric power to the motor, the controller of the vehicle comprising:

engine stopping means for stopping the operation of the engine at a stopping time of the vehicle;

motor control means for driving the vehicle and rotating the engine by controlling the driving of the motor at a starting time of the vehicle;

load condition detecting means for detecting a load condition having an influence on the magnitude of load torque given to the motor during the stoppage of the engine when the vehicle is started by the motor;

ignition condition setting means for setting an ignition condition for starting the engine on the basis of the load condition detected by the load condition detecting means;

ignition condition judging means for judging that the ignition condition set by the ignition condition setting means is satisfied; and

engine ignition means for starting-up the engine on the basis of the judging result of the ignition condition judging means.

2. The controller of the vehicle according to claim 1, the controller further comprising rotation number detecting means for detecting the rotation number of the engine, wherein the ignition condition setting means sets an ignition starting rotation number of the engine as the ignition condition on the basis of the load condition, and

the ignition condition judging means judges that the ignition condition is satisfied when the rotation number of the engine detected by the rotation number detecting means reaches the ignition starting rotation number.

3. The controller of the vehicle according to claim 2, wherein the ignition condition setting means sets a low ignition starting rotation number when the load torque given to the motor on the basis of the load condition is large, and sets a high ignition starting rotation number when the load torque given to the motor on the basis of the load condition is small.

4. The controller of the vehicle according to claim 3, wherein the motor control means has rotation number control means for controlling the rotation number of the motor by setting a target rotation number at the starting time of the vehicle, and the rotation number control means sets a low target rotation number when the load torque given to the motor is large.

5. The controller of the vehicle according to claim 1, wherein the engine is a water cooling type engine, and the load condition detecting means has engine water temperature detecting means for detecting the water temperature of the water cooling type engine and detects the water temperature of the water cooling type engine as the load condition, and the ignition condition setting means sets the ignition condition on the basis of the water temperature of the water cooling type engine.

6. The controller of the vehicle according to claim 5, the controller comprising request torque detecting means for detecting a torque requested by a driver, wherein the ignition condition setting means sets the ignition condition on the basis of the water temperature of the water cooling type engine and the requested torque.

7. The controller of the vehicle according to claim 1, wherein the vehicle comprises an automatic speed change gear having a speed changing mechanism lubricated by lubricating oil and changing the speeds of driving rotations of the engine and the motor and outputting the changed speeds to a driving wheel, and the load condition detecting means has lubricating oil temperature detecting means for detecting the temperature of the lubricating oil of the automatic speed change gear, and detects the temperature of the lubricating oil of the automatic speed change gear as the load condition, and the ignition condition setting means sets the ignition condition on the basis of the temperature of the lubricating oil of the automatic speed change gear.

8. The controller of the vehicle according to claim 1, wherein the controller further comprises ignition condition correcting means for correcting the ignition condition set by the ignition condition setting means on the basis of a predetermined condition.

9. The controller of the vehicle according to claim 8, the controller further comprising battery remaining amount detecting means for detecting the remaining charging amount of the battery, and the ignition condition correcting means corrects the ignition condition on the basis of the remaining charging amount of the battery detected by the battery remaining amount detecting means as the predetermined condition.

10. The controller of the vehicle according to claim 8, the controller further comprising battery performance detecting means for detecting a performance state of the battery, and the ignition condition correcting means corrects the ignition condition on the basis of the performance state of the battery detected by the battery performance detecting means as the predetermined condition.

11. The controller of the vehicle according to claim 8, the controller further comprising battery temperature detecting means for detecting the temperature of the battery,

and the ignition condition correcting means corrects the ignition condition on the basis of the temperature of the battery detected by the battery temperature detecting means as the predetermined condition.

12. The controller of the vehicle according to claim 11, the controller further comprising external air temperature detecting means for detecting the external air temperature of the vehicle, and the battery temperature detecting means detects the temperature of the battery on the basis of the detection of the external air temperature detecting means.

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